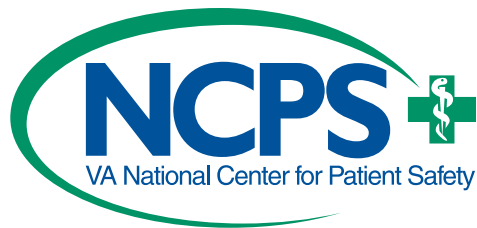


*"To care for him who shall have
borne the battle and for his
widow and his orphan."*

Abraham Lincoln,
Second Inaugural Address



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Human Factors Engineering



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Human Factors Engineering

Human factors engineering (HFE) applies what is known about human capabilities and limitations when designing products or processes, a particularly significant issue when involving the design of sophisticated medical equipment.

One of the key factors when conducting an HFE analysis of a device or process is to determine its “usability.” The usability of a product or process is directly related to the sequence of actions carried out when trying to use it. One way to think of the usability of a machine or system is to think of this sequence of actions as a “dialogue” between a tool’s

user and the tool—and the more intuitive the dialogue, the better.

For example, think of the steps one must go through to turn on a cellular phone. In a phone built with HFE in mind, one would simply press the “on” button to start the phone. However, as is the case with some brands of cellular phones, the “end” button must be selected to turn on the phone.

Counterintuitive designs, like the example noted above concerning the cell phone, can create serious

problems when medical technology is in question. The more complex and counterintuitive the sequence of actions required to run medical devices or use clinical software, the more likely an error during use can cause a patient to suffer inadvertent harm.

Because HFE addresses specific human characteristics that are applicable to

the design of a system or of a device, the more “human-centered” the design, the more it can support or can enhance a person’s performance.

Prior to its implementation by frontline users, a system’s performance and reliability can be improved by applying HFE principles and tools to its design, to include the design of hardware and software.

If a device has a high level of usability it can reduce the likelihood of causing harm to a patient. A high level of usability can reduce related stress or fatigue, as well as offer the user a more satisfying experience. The device or software will be more efficient with less training requirements.

In-depth information on HFE can be gained from organizations like the Human Factors and Ergonomics Society: www.hfes.org

Also see: Gosbee J.W., Introduction to the human factors engineering series. *Joint Commission Journal on Quality and Safety*. 2004; 30(4): 215-219.

